INDUCED OVARIAN MATURATION OF *PENAEUS VANNAMEI* BY IMPLANTATION OF LOBSTER BRAIN

In many decapod crustaceans, control of ovarian maturation is a major problem in developing commercial aquaculture programs. Induction of ovarian maturation in *Penaeus vannamei*, by implantation of brain prepared from female lobster, *Homarus americanus*, with developing ovaries was investigated under tank culture conditions. Three of five females with brain implants were maturing while none of 10 females of the control groups with abdominal ganglion or no implant matured (Table 1). Two ripe stage V were found 17 days after implantation of lobster brain. This indicates that ovarian maturation of *P. vannamei* in tanks can be induced and accelerated by implantation of brain prepared from maturing females of another species. Ovarian maturation may be induced by a brain hormone (BH), secreted by the brain of maturing females. This brain hormone is not species specific in activity in the shrimp and lobster. I have demonstrated that ovarian maturation is induced by a gonad-stimulating hormone (GSH), secreted by the thoracic ganglion of maturing females in penaeid shrimp. This GSH may be triggered by BH, which probably is working as a gonad-stimulating hormone-releasing hormone (GSH-RH) in regulating ovarian maturation in shrimp and lobster.

Isao Yano, National Research Institute of Aquaculture, Nakatsuhama, Nanseicho, Mie, Japan.

TABLE 1. Effects of implantation of brain prepared from maturing female lobster, *Homarus americanus*, on induction of ovarian maturation of *Penaeus vannamei* 17 days after treatment. * Size: 30–35g in body weight.

	No. of Shrimp	No. of females showing various stages of ovarian development					% of maturing shrimp
		I	II	III	IV	V	
Brain implantation	5	1	0	1	0	2	75.0
Abdominal ganglion implantation	5	4	0	0	0	0	0.0
No implantation	5	5	0	0	0	0	0.0

THE EFFECT OF ARTIFICIALLY LIGHTED TRAWLS ON CATCHES OF CRUSTACEANS

A series of 32 micronektonic samples were taken with a rectangular midwater trawl (8) in open oceanic water off N.W. Africa (20°30'N, 19°40'W), at a depth of 800±25m, below the effective penetration of surface daylight. The net, fitted with a sea-light and battery pack, was fished for a series of two hour tows, half with lights on and half with lights off, throughout the day and night.

Catches of crustaceans, comprising mainly of mysids and decapods, were relatively consistent in biomass (wet displacement volume), species composition, and size irrespective of the artificial lighting. Mysids were represented mainly by one species of *Eucopia*, total numbers and biomass of which were similar in most samples.

Decapoda were identified to species and the carapace length measured. The size varied from 4.5mm CL to a maximum of 35mm CL but most specimens were in the range 4.5mm–15mm CL. A total of thirty species were identified, of which four were numerically dominant and a further ten occurred in moderate numbers. There was no indication that artificial lighting had an affect on species composition. Numerically dominant decapod taxa included two species of *Gennadas*, one of *Acanthephyra* and one of *Sergia* many specimens of which were juveniles or young adults.

Preliminary statistical analyses including an analyses of variance based on the ten most abundant decapod species indicated that there was no significant difference between catches irrespective of the artificial lighting. This confirms previous work (Hargreaves, unpubl.) that catches of many decapod and mysid species found at depths of 800m off Madeira were hardly affected by lighted trawls. Initial results on crustacean biomass from paired hauls (Clarke and Pascoe, 1985) indicated that at 800m depth in the Bay of Biscay and off Madeira catches of Decapoda may be diminished with the use of lighted trawls. These indications are not supported by the present data. However differences in species sampled or in their maturity stages may be responsible for the apparent variations.

Literature Cited

Clarke, M.R. and Pascoe, P.I. 1985. The Influence of an electric light on the capture of deep-sea animals by a midwater trawl. Journal of the Marine Biological Association of the United Kingdom 65: 373–393.

P.M. Hargreaves, Institute of Oceanographic Sciences, Deacon Laboratory, Wormley, Surrey, GU8 543 UK.